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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,277	01/26/2004	Shinji Iio	032179	2047

38834 7590 05/21/2004

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EXAMINER

HEALY, BRIAN

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicati n N .

10/763,277

Applicant(s)

IIO ET AL.

Examin r

Brian M. Healy

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-13 is/are allowed.
- 6) ☒ Claim(s) 1-5, 8 and 9 is/are rejected.
- 7) ☒ Claim(s) 6, 7 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 05182004
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

**DETAILED ACTION*****Allowable Subject Matter***

Claims 6,7 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the references of record teaches a waveguide layer formed by a semiconductor layer having a narrower band gap than that of the clad layer and is formed by a layer having a different polarity or p-ALGaAS stacked as a clad layer and n-AlGaAs having a lower Al content ratio (including 0) than the clad layer is stacked as a waveguide layer as well as the use of GaInNAs as a semiconductor layer in the optical switch. These limitations are recited in claims 6,7 and 10.

Claims 11-13 are allowed over the prior art of record. The closest prior art of record, Matsumura et. al., U.S.P. No.4,737,003 is discussed below.

Matsumura et. al. 003' does not teach or suggest the claimed optical switch with three clad layers, waveguide layer, contact layer, an oxide layer, electrode layer and impurity diffusion layer (See claim 13 for specific details.).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

**Office action:**

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsumura et. al., U.S.P. No.4,737,003.

Matsumura et. al. 003' teaches (Figs.1-7g) an optical switch for switching a transmission path in a waveguide comprising: an optical substrate 21, electrode layers 31,24, a PN junction for carrier injection formed by clad/waveguiding layer 23,22 with layer 22 being a carrier accumulating layer in which in which the injected carriers are accumulated is provided on a semiconductor substrate having the waveguide formed thereon so that switching between crossed waveguides 25-1,25-2 and 26-1,26-2. Note that when carriers are injected the bandgap and refractive index of a semiconductor material changes (See Col. 3, lines 25-58). The semiconductor material includes InGaASP as well as groups II, III, V, VI Compound semiconductors (This can include SiGe semiconductor.) The teachings of Matsumura et. al. clearly, fully meets Applicant's claimed limitations.

A copy of PTO-1449 will be included in this office action.

The following references are cited by the Examiner as being pertinent prior art: Goto, U.S.P. No.5,107,514 (Figs.1-5), Nakamura et. al., U.S.P. No.4,784,451 (Figs.1-11(b)) and Chua et. al., U.S.P. No.6,633,692 (Figs.1-8).

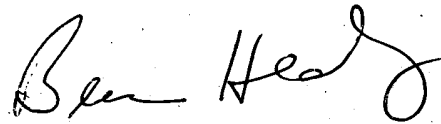
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian M. Healy whose telephone number is (571)272-2347. The examiner can normally be reached on Compressed schedule Tues-Thurs, 7AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernik can be reached on (571)272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian M. Healy  
Primary Examiner  
Art Unit 2874

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A handwritten signature in black ink, appearing to read "Brian Healy", with a stylized flourish at the end.

Brian Healy  
Primary Examiner